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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,244	10/14/2003	Mikhail Belenkii	496	5732

7590 11/15/2006  
JOHN R. ROSS  
Trex Enterprises  
10455 Pacific Center Ct.  
San Diego, CA 92121

EXAMINER

RATCLIFFE, LUKE D

ART UNIT PAPER NUMBER

3662

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/685,244	<b>Applicant(s)</b> BELENKII ET AL.	
	<b>Examiner</b> Luke D. Ratcliffe	<b>Art Unit</b> 3662	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-14, 16, 17, 20-23 and 26 is/are rejected.
- 7) ☒ Claim(s) 11, 15, 18, 19, 24 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Wang (20020145727).

Wang shows a device for measuring gaseous fluid flow including a disturbance means (paragraph 10), an optical unit (figure 1 Ref 13), a detector (figure 1 Ref D1 and D2), and a processor (figure 1).

Claims 1, 3, 5, 6, 13, 21, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Tavlarides (5074658).

Referring to claim 1 Tavlarides shows a disturbance means (figure 1 Ref. 16), an optical unit (figure 1 Ref. 18), a detector (figure 1 Ref. 36), and a processor (column 6 lines 10-15). Tavlarides shows a means for measuring a gaseous fluid because there is not a constant stream of fluid, it is interrupted by gaseous segments whose speed is also measured.

Referring to claim 3 Tavlarides shows a means for a drop injector (column 2 and 3).

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Referring to claim 5 Tavlarides shows a means for a water droplet injector (column 2 and 3).

Referring to claim 6 Tavlarides shows a pattern producing unit (figure 1).

Referring to claim 13 Tavlarides shows a laser and laser optics (figure 1), an interference means (figure 1 Ref. 16), two optical detectors (figure 1 Ref. 36 and 38), and a correlation means (column 6 lines 10-15).

Referring to claim 21 Tavlarides shows a means for producing optical perturbations (figure 1), transmitting a laser beam (figure 1 Ref. 18), measuring at least two perturbed laser with at least two detectors (figure 1 Ref. 36 and 38).

Referring to claim 26 Tavlarides shows a tube section (figure 1), an optical element (figure 1 Ref. 18), a water drop injector (column 2 and 3), a detector (figure 1 Ref. 36), a focusing element (figure 1 Ref. 30), and a processor (column 6 lines 10-15).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 6, 13, 16, 20, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunz (2002/0007685) in view of Tavlarides (5074658).

Referring to claim 1 Kunz shows a fluid flow measurement system and Tavlarides shows a disturbance means (figure 1 Ref. 16), an optical unit (figure 1 Ref. 18), a detector (figure 1 Ref. 36), and a processor (column 6 lines 10-15). Kunz shows

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a fluid flow measurement system. It would have been obvious to modify Kunz to include the teachings of Tavlarides because the optical system is a non-invasive accurate system to measure flow rate.

Referring to claims 4 and 20 Kunz shows a flow sensor that is used in a respirator or breathing tube (column 3).

Referring to claim 6 Tavlarides shows a pattern producing unit (figure 1). It would have been obvious to modify Kunz to include the patter producing unit as taught by Tavlarides because this unit will increase the ability of the optical sensor to detect a disturbance.

Referring to claim 13 Kunz shows an optical flow rate measurement device and Tavlarides shows a laser and laser optics (figure 1), an interference means (figure 1 Ref. 16), two optical detectors (figure 1 Ref. 36 and 38), and a correlation means (column 6 lines 10-15). It would have been obvious to modify Kunz to include the teachings of Tavlarides because the optical system is a non-invasive accurate system to measure flow rate.

Referring to claim 16 it would be obvious to compare fringe data using oscilloscope because this is a well known way to compare multiple signals.

Referring to claim 21 Kunz shows an optical flow rate measurement device and Tavlarides shows a means for producing optical perturbations (figure 1), transmitting a laser beam (figure 1 Ref. 18), measuring at least two perturbed laser with at least two detectors (figure 1 Ref. 36 and 38). It would have been obvious to modify Kunz to

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include the teachings of Tavlarides because the optical system is a non-invasive accurate system to measure flow rate.

Referring to claim 22 Kunz as modified shows two detectors (Tavlarides Figure 1 Ref. 28 and 30). It would have been obvious to modify Kunz to use an oscilloscope to compare information from the two detectors because this is a well known way to compare multiple signals.

Referring to claim 26 Kunz shows an optical flow rate measurement device and Tavlarides shows a tube section (figure 1), an optical element (figure 1 Ref. 18), a water drop injector (column 2 and 3), a detector (figure 1 Ref. 36), a focusing element (figure 1 Ref. 30), and a processor (column 6 lines 10-15). It would have been obvious to modify Kunz to include the teachings of Tavlarides because the optical system is a non-invasive accurate system to measure flow rate.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kunz (2002/0007685) in view of Tavlarides (5074658) as applied to claim 1 above, and further in view of Miller (4532811).

Miller shows a disturbance means of heating (column 2 lines 45-60). It would have been obvious to further modify Kunz to include the heating of Miller because this is a common means of creating a disturbance.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunz (2002/0007685) in view of Tavlarides (5074658) as applied to claim 1 above, and further in view of Rizzo (3825346).

Referring to claim 3 Rizzo shows a means for a drop injector (figure 2 Ref. 13). It would have been obvious to modify Kunz to include the drop injector because this is a simple way to inject a disturbance into the gas stream.

Referring to claim 5 Rizzo shows a means for a water droplet injector (figure 2 Ref. 13). It would have been obvious to modify Kunz to include the water droplet injector because water is an efficient means to measure the movement of gas and is not harmful to humans if ingested.

Claim 7 and 8 are under 35 U.S.C. 103(a) as being unpatentable over Tavlarides (5074658) in view of Kaufmann (4948257).

Referring to claim 7 Kaufmann shows an optical unit that has lens grating (column 4 lines 25-50). It would have been obvious to modify Tavlarides to include the lens grating taught in Kaufmann because it is a simple and efficient way to measure the speed of the water that flows with the fluid that is to be measured.

Referring to claim 8 Tavlarides as modified shows a lens for focusing onto the detectors (figure 1 Ref. 30). It would have been obvious to modify Tavlarides to include the focusing lens because this is a well known method for focusing light onto a detector.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tavlarides (5074658) in view of Kaufmann (4948257) as applied to claim 8 above, and further in view of Petersen (5549114).

Referring to claims 9 and 10 Petersen shows a method for using a microprocessor that uses the fast Fourier transform (FFT) (Column 8 lines 14-50). It would have been obvious to further modify Tavlarides to include the microprocessor that

uses the FFT because this is a common method for converting time varying signals into temporal frequency information.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kunz (2002/0007685) in view of Tavlarides (5074658) as applied to claim 5 above, and further in view of Miles (4988190).

Miles shows a detector array used in a method used to measure the flow of fluid (column 8 lines 45-70). It would have been obvious to use a detector array because these are commonly used when more than one detector is needed.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kunz (2002/0007685) in view of Tavlarides (5074658) as applied to claim 13 above, and further in view of Miller (4532811).

Kunz as modified shows an optic beam passing through the fluid (Tavlarides figure 1) and a heating unit (Miller column 1 lines 50-56). It would have been obvious to modify Kunz to include the optic beam because this is a common method for measuring velocity of a moving substance. It would have been obvious to further modify Kunz to include the heating element talked about in Miller because heating is a common method for adding a disturbance to a fluid.

Claim 17 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunz (2002/0007685) in view of Tavlarides (5074658) as applied to claim 13 and 21 above, and further in view of Wang (6369881).

Wang shows an algorithm that is run by a microprocessor that internally has an A to D and performs cross correlations (column 4 lines 44-60). It would have been



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obvious to have a processor use cross correlations because this is an effective way to compare multiple streams of data.

***Allowable Subject Matter***

Claims 11, 15, 18-19, 24, and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

Applicant's arguments filed 3/20/06 have been fully considered but they are not persuasive. Tavlarides shows a means for measuring a gaseous fluid because there is not a constant stream of fluid, it is interrupted by gaseous segments whose speed is also measured. This allows Tavlarides to measure the flow of a gaseous fluid as noted in figure 1.

Additional art has been cited that was cited in the last office action however the pre grant publication is now the reference rather than the patent. This art is cited because it also anticipates the invention.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke D. Ratcliffe whose telephone number is 571-272-3110. The examiner can normally be reached on 8:00-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LDR

LDR



THOMAS H. TARCZA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600